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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,343	08/19/2003	Craig S. Calvert	PM 2002.001	3824

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EXXONMOBIL UPSTREAM RESEARCH COMPANY  
P. O. Box 2189  
Houston, TX 77252-2189

EXAMINER

SHARON, AYAL I

ART UNIT PAPER NUMBER

2123

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/643,343

Applicant(s)

CALVERT ET AL.

Examiner

Ayal I. Sharon

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/19/03, 6/24/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Introduction*

1. Claims 1-16 of U.S. Application 10/643,343, originally filed on 8/19/2003, have been presented for examination.

### *Drawings*

2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

### *Claim Rejections - 35 USC § 101*

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claims 1-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**
5. The Examiner respectfully submits that under current PTO practice, the claimed invention does not recite *either a useful or a tangible result*:
6. The fundamental test for patent eligibility is to determine whether the claimed invention produces a **“useful, concrete and tangible result.”** See State Street Bank & Trust Co. v. Signature Financial Group Inc., 149 F. 3d 1368, 47 USPQ2d

1596 (Fed. Cir. 1998) and AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 50 USPQ2d 1447 (Fed. Cir. 1999). In these decisions, the court found that the claimed invention as a whole must accomplish a practical application. That is, it must produce a “useful, concrete and tangible result.”

7. See State Street, 149 F.3d at 1373-74, 47 USPQ2d at 1601-02. (“[T]he transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces ‘a useful, concrete and tangible result’ – a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades”).
8. See also AT&T, 172 F.3d at 1358, 50 USPQ2d at 1452 (Claims drawn to a long-distance telephone billing process containing mathematical algorithms were held patentable subject matter because the process used the algorithm to produce a useful, concrete, tangible result - a primary inter-exchange carrier (“PIC”) indicator - without preempting other uses of the mathematical principle).
9. The Examiner respectfully submits that the claimed invention does not recite a concrete, useful, tangible result.

### ***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. The prior art used for these rejections is as follows:

- a. Jones et al., U.S. PG-PUB 2003/0182093. ("**Jones**").
- b. Calvert et al., U.S. Patent 6,480,790. ("**Calvert**").

12. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

**13. Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Jones.**

14. The applied reference has a common assignee, and common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

15. In regards to Claim 1, Jones teaches the following limitations:

1. *A method of generating a model of a random field which has directionally varying continuity, comprising:*
  - a) *specifying a tentative model for said random field;*
  - b) *identifying connected strings of nodes within said model;*
  - c) *performing a spectral simulation on each of said strings of nodes;*

- d) *updating said tentative model with data values resulting from said spectral simulations.*

(See Jones, especially: Figs.3 and 4, and paragraphs [0032] to [0044])

16. In regards to Claim 2, Jones teaches the following limitations:

- 2. *The method of claim 1, wherein a grid of azimuths is used to identify said connected strings of nodes.*

(See especially: Jones, Figs.3 and 4, and paragraphs [0032] to [0044])

17. In regards to Claim 3, Jones teaches the following limitations:

- 3. *The method of claim 1, wherein said model is subdivided into layers, and steps b), c) and d) are performed on a layer-by-layer basis.*

(See Jones, especially: Figs.3 and 4, and paragraphs [0032] to [0044])

18. In regards to Claim 4, Jones teaches the following limitations:

- 4. *The method of claim 1, wherein for each of said strings of connected nodes said spectral simulation comprises:*

- a) *determining a phase spectrum from a Fourier transform of said string;*
- b) *specifying an amplitude spectrum which represents the maximum desired spatial continuity for said string; and*
- c) *inverse Fourier transforming said phase spectrum and said amplitude spectrum to determine updated data values for said nodes in said string.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

19. In regards to Claim 5, Jones teaches the following limitations:

- 5. *The method of claim 4, wherein one or more of each of said strings is padded with additional data values prior to calculation of the Fourier transform of said string.*

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(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

20. In regards to Claim 6, Jones teaches the following limitations:

6. *A method of generating a model of a random field which has directionally varying continuity, comprising:*

- a) *specifying a tentative model for said random field;*
- b) *for each of said layers,*

*[i] specifying a grid of azimuths for nodes in said model;*

*[ii] using said grid to identify connected strings of nodes within said model;*

*[iii] performing a spectral simulation on each of said strings of nodes, for each said string said spectral simulation involving the determination of a phase spectrum from a Fourier transform of said string, the specification of an amplitude spectrum which represents the maximum-desired spatial continuity for said string; and the inverse Fourier transform of said phase spectrum and said amplitude spectrum to determine updated data values for said nodes in said string; and*

*[iv] updating said tentative model with data values resulting from said spectral simulations.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

21. In regards to Claim 7, Jones teaches the following limitations:

7. *The method of claim 6, wherein one or more of each of said strings is padded with additional data values prior to calculation of the Fourier transform of said string.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

22. In regards to Claim 8, Jones teaches the following limitations:

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8. *The method of claim 1, wherein neighboring nodes to each said node in each said string of nodes are identified and further wherein said spectral simulation is multidimensional.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

23. In regards to Claim 9, Jones teaches the following limitations:

9. *The method of claim 6, wherein neighboring nodes to each said node in each of said strings are identified and wherein said spectral simulation is two-dimensional.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

24. In regards to Claim 10, Jones teaches the following limitations:

10. *The method of claim 1, wherein said tentative model is specified from a spectral simulation comprising*

- a) *determination of a phase spectrum from a Fourier transform of a first estimate of said tentative model;*
- b) *specification of an amplitude spectrum for said tentative model; and*
- c) *inverse Fourier transforming said phase spectrum and said amplitude spectrum to determine said tentative model.*

(See Jones, especially: Jones, Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

25. In regards to Claim 11, Jones teaches the following limitations:

11. *The method of claim 10, where said amplitude spectrum characterizes the short-range continuity desired in said tentative model.*

(See Jones, especially: Jones, Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)



26. In regards to Claim 12, Jones teaches the following limitations:

*12. The method of claim 10, where said spectral simulation is applied on a layer-by-layer basis to each of one or more layers of said tentative model.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

27. In regards to Claim 13, Jones teaches the following limitations:

*13. The method of claim 10, where said tentative model is specified from a three-dimensional spectral simulation.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

28. In regards to Claim 14, Jones teaches the following limitations:

*14. The method of claim 13, wherein said identified strings of connected nodes are used to identify curtains of connected nodes, and two-dimension spectral simulation is applied to each of said curtains.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

29. In regards to Claim 15, Jones teaches the following limitations:

*15. The method of claim 1, wherein a grid of dips is used to identify said strings of connected nodes.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

30. In regards to Claim 16, Jones teaches the following limitations:

*16. The method of claim 1, wherein a combined grid of dips and azimuths are used in three-dimensions to identify said strings of connected nodes.*

(See Jones, especially: Fig.3 Items 310, 312, and 314; and Fig.4, Items 412, 414, and 416; and paragraphs [0032] to [0044]. See also paragraphs [0009] and [0010].)

**31. Claims 1-3, 8, and 15-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Calvert.**

32. In regards to Claim 1, Jones teaches the following limitations:

1. *A method of generating a model of a random field which has directionally varying continuity, comprising:*
  - a) *specifying a tentative model for said random field;*
  - b) *identifying connected strings of nodes within said model;*
  - c) *performing a spectral simulation on each of said strings of nodes;*
  - d) *updating said tentative model with data values resulting from said spectral simulations.*

(See especially: Calvert, Figs. 2A, 2B, 3A, 3B, and associated text at col.10, line 58 to col.11, line 42)

33. In regards to Claim 2, Jones teaches the following limitations:

2. *The method of claim 1, wherein a grid of azimuths is used to identify said connected strings of nodes.*

(See especially: Calvert, Figs. 2A, 2B, 3A, 3B, and associated text at col.10, line 58 to col.11, line 42)

34. In regards to Claim 3, Jones teaches the following limitations:

3. *The method of claim 1, wherein said model is subdivided into layers, and steps b), c) and d) are performed on a layer-by-layer basis.*

(See especially: Calvert, Figs. 2A, 2B, 3A, 3B, and associated text at col.10, line 58 to col.11, line 42)

35. In regards to Claim 8, Jones teaches the following limitations:

8. *The method of claim 1, wherein neighboring nodes to each said node in each said string of nodes are identified and further wherein said spectral simulation is multidimensional.*

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(See especially: Calvert, Figs. 2A, 2B, 3A, 3B, and associated text at col.10, line 58 to col.11, line 42)

36. In regards to Claim 15, Jones teaches the following limitations:

*15. The method of claim 1, wherein a grid of dips is used to identify said strings of connected nodes.*

(See especially: Calvert, Figs. 2A, 2B, 3A, 3B, and associated text at col.10, line 58 to col.11, line 42)

37. In regards to Claim 16, Jones teaches the following limitations:

*16. The method of claim 1, wherein a combined grid of dips and azimuths are used in three-dimensions to identify said strings of connected nodes.*

(See especially: Calvert, Figs. 2A, 2B, 3A, 3B, and associated text at col.10, line 58 to col.11, line 42)

### ***Claim Rejections - 35 USC § 103***

38. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

39. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

40. The prior art used for these rejections is as follows:

- a. Calvert et al., U.S. Patent 6,480,790. ("**Calvert**").
- b. Partyka et al., U.S. Patent 6,131,071. ("**Partyka**").

41. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

**42. Claim 4-7 and 9-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Calvert in view of Partyka.**

43. In regards to Claim 4, Calvert does not expressly teach the following limitations:

- 4. *The method of claim 1, wherein for each of said strings of connected nodes said spectral simulation comprises:*
  - a) *determining a phase spectrum from a Fourier transform of said string;*
  - b) *specifying an amplitude spectrum which represents the maximum desired spatial continuity for said string; and*
  - c) *inverse Fourier transforming said phase spectrum and said amplitude spectrum to determine updated data values for said nodes in said string.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

Calvert and Partyka are analogous art because they are from the same field of endeavor – constructing and analyzing three-dimensional geological models.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the teachings of Calvert with those of Partyka, because Partyka "provide[s] improved quantification and visualization of subtle seismic thin bed tuning effects and other sorts of lateral rock discontinuities." (See Partyka: abstract).

Therefore, it would have been obvious to combine Calvert with Partyka to obtain the invention as specified in the claim.

44. In regards to Claim 5, Calvert does not expressly teach the following limitations:

5. *The method of claim 4, wherein one or more of each of said strings is padded with additional data values prior to calculation of the Fourier transform of said string.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

45. In regards to Claim 6, Calvert teaches the following limitations:

6. *A method of generating a model of a random field which has directionally varying continuity, comprising:*

- a) *specifying a tentative model for said random field;*
- b) *for each of said layers,*

*[i] specifying a grid of azimuths for nodes in said model;*

*[ii] using said grid to identify connected strings of nodes within said model;*

However, Calvert does not expressly teach the following limitations:

*[iii] performing a spectral simulation on each of said strings of nodes, for each said string said spectral simulation involving the determination of a phase spectrum from a Fourier transform of said string, the specification of an amplitude spectrum which represents the maximum-desired spatial continuity for said string; and the*

*inverse Fourier transform of said phase spectrum and said amplitude spectrum to determine updated data values for said nodes in said string; and*

*[iv] updating said tentative model with data values resulting from said spectral simulations.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

Calvert and Partyka are analogous art because they are from the same field of endeavor – constructing and analyzing three-dimensional geological models.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the teachings of Calvert with those of Partyka, because Partyka “provide[s] improved quantification and visualization of subtle seismic thin bed tuning effects and other sorts of lateral rock discontinuities.” (See Partyka: abstract).

Therefore, it would have been obvious to combine Calvert with Partyka to obtain the invention as specified in the claim.

46. In regards to Claim 7, Calvert does not expressly teach the following limitations:

*7. The method of claim 6, wherein one or more of each of said strings is padded with additional data values prior to calculation of the Fourier transform of said string.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

47. In regards to Claim 9, Calvert does not expressly teach the following limitations:

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9. *The method of claim 6, wherein neighboring nodes to each said node in each of said strings are identified and wherein said spectral simulation is two-dimensional.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

48. In regards to Claim 10, Calvert does not expressly teach the following limitations:

10. *The method of claim 1, wherein said tentative model is specified from a spectral simulation comprising*

- a) determination of a phase spectrum from a Fourier transform of a first estimate of said tentative model;*
- b) specification of an amplitude spectrum for said tentative model; and*
- c) inverse Fourier transforming said phase spectrum and said amplitude spectrum to determine said tentative model.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

Calvert and Partyka are analogous art because they are from the same field of endeavor – constructing and analyzing three-dimensional geological models.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the teachings of Calvert with those of Partyka, because Partyka “provide[s] improved quantification and visualization of subtle seismic thin bed tuning effects and other sorts of lateral rock discontinuities.” (See Partyka: abstract).

Therefore, it would have been obvious to combine Calvert with Partyka to obtain the invention as specified in the claim.

49. In regards to Claim 11, Calvert does not expressly teach the following limitations:

*11. The method of claim 10, where said amplitude spectrum characterizes the short-range continuity desired in said tentative model.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

50. In regards to Claim 12, Calvert does not expressly teach the following limitations:

*12. The method of claim 10, where said spectral simulation is applied on a layer-by-layer basis to each of one or more layers of said tentative model.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

51. In regards to Claim 13, Calvert does not expressly teach the following limitations:

*13. The method of claim 10, where said tentative model is specified from a three-dimensional spectral simulation.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

52. In regards to Claim 14, Calvert does not expressly teach the following limitations:

*14. The method of claim 13, wherein said identified strings of connected nodes are used to identify curtains of connected nodes, and two-dimension spectral simulation is applied to each of said curtains.*

Partyka, on the other hand, does expressly teach these limitations. See Partyka, especially: col.1, lines 10-27; col.7, line 10 to col.8, line 32; and col.8, line 63 to col.9, line 63.

### **Conclusion**



53. The following prior art, made of record and not relied upon, is considered pertinent to applicant's disclosure.

54. Ram, A. and J.P. Narayan. "Synthetic Seismograms for a Layered Earth Geological Model Using the Absorption and Dispersion Phenomena." Pure and Applied Geophysics. Vol. 149, Issue 3, pp.541-551. (1997). Abstract Only. (Teaches the use of a Fourier transform when constructing and analyzing geological models.)

55. Calvert et al., U.S. PG-PUB 2003/0115029. (Art from the same field of endeavor – constructing and analyzing three-dimensional geological models. This reference has inventors in common with the instant application).

56. Calvert et al., U.S. PG-PUB 2002/0042702. (Art from the same field of endeavor – constructing and analyzing three-dimensional geological models. This reference has inventors in common with the instant application).

57. Bishop. U.S. Patent 5,848,379. (Art from the same field of endeavor – constructing and analyzing three-dimensional geological models. This reference has inventors in common with the instant application).

### ***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a bi-week, 8:30 am – 5:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753.

Any response to this office action should be faxed to (571) 273-8300, or mailed to:


USPTO  
P.O. Box 1450  
Alexandria, VA 22313-1450

or hand carried to:

USPTO  
Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon  
Art Unit 2123  
August 21, 2006

  
PAUL RODRIGUEZ  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100  
8/21/06